

AZT Review For Exam 1

$$1) \frac{\sqrt{48}}{\sqrt{3}} = \sqrt{16} = 4 \quad \boxed{D}$$

$$2) \frac{\sqrt[3]{25}}{\sqrt[3]{16}} \cdot \frac{\sqrt[3]{4}}{\sqrt[3]{4}} = \frac{\sqrt[3]{100}}{\sqrt[3]{64}} = \frac{\sqrt[3]{100}}{4} \quad \boxed{C}$$

Need a perfect cube to take out.

$$3) \sqrt[3]{24x^8}$$

$$\sqrt[3]{8x^6} \sqrt[3]{3x^2}$$

$$\boxed{2x^2 \sqrt[3]{3x^2}}$$

$$4) \sqrt[3]{\frac{81x^7}{z^3}} = \frac{\sqrt[3]{81x^7}}{\sqrt[3]{z^3}} = \frac{\sqrt[3]{27x^6} \cdot \sqrt[3]{3x}}{z} = \frac{3x^2 \sqrt[3]{3x}}{z}$$

$$5) \sqrt[3]{54x^7y^{19}}$$

$$\sqrt[3]{27x^6y^{18}} \sqrt[3]{2xy}$$

$$\boxed{3x^2y^6 \sqrt[3]{2xy}}$$

$$6) \frac{\sqrt[3]{1}}{\sqrt[3]{4}} \cdot \frac{\sqrt[3]{2}}{\sqrt[3]{2}} = \frac{\sqrt[3]{2}}{\sqrt[3]{8}} = \frac{\sqrt[3]{2}}{2}$$

$$7) 6\sqrt{8} + 2\sqrt{18}$$

$$6\sqrt{4}\sqrt{2} \quad 2\sqrt{9}\sqrt{2}$$

$$6 \cdot 2\sqrt{2} \quad 2 \cdot 3\sqrt{2}$$

$$12\sqrt{2} + 6\sqrt{2}$$

$$\boxed{18\sqrt{2}} \quad \boxed{D}$$

$$8) \sqrt{8x^3} + \sqrt{50x^5} - \sqrt{18x^3} - \sqrt{32x^5}$$

$$\sqrt{4x^2}\sqrt{2x} \quad \sqrt{25x^4}\sqrt{2x} \quad \sqrt{9x^2}\sqrt{2x} \quad \sqrt{16x^4}\sqrt{2x}$$

$$2x\sqrt{2x} + 5x^2\sqrt{2x} - 3x\sqrt{2x} - 4x^2\sqrt{2x}$$

$$\boxed{-x\sqrt{2x} + x^2\sqrt{2x}} \quad \boxed{A}$$

$$9) (2\sqrt{3} - 3\sqrt{2})^2$$

$$(2\sqrt{3} - 3\sqrt{2})(2\sqrt{3} - 3\sqrt{2})$$

$$4 \cdot 3 - 6\sqrt{6} - 6\sqrt{6} + 9 \cdot 2$$

$$12 - 12\sqrt{6} + 18$$

$$\boxed{30 - 12\sqrt{6}} \quad \boxed{B}$$

$$10) (4\sqrt{2} + 3\sqrt{5})(4\sqrt{2} - 3\sqrt{5})$$

$$16 \cdot 2 - 12\sqrt{10} + 12\sqrt{10} - 9 \cdot 5$$

$$32 - 45$$

$$\boxed{-13} \quad \boxed{C}$$

$$11) \frac{\sqrt{18} + \sqrt{2}}{\sqrt{2}}$$

$$\frac{\sqrt{18}}{\sqrt{2}} + \frac{\sqrt{2}}{\sqrt{2}}$$

$$\sqrt{9} + 1$$

$$3 + 1$$

$$\boxed{4} \text{ (A)}$$

$$13) \sqrt{3} (\sqrt{3} - 2\sqrt{5})$$

$$\boxed{3 - 2\sqrt{15}}$$

$$12) \sqrt[3]{8x^2} \cdot \sqrt[3]{3x^4}$$

$$\sqrt[3]{24x^6}$$

$$\sqrt[3]{8x^6} \sqrt[3]{3}$$

$$\boxed{2x^2 \sqrt[3]{3}}$$

$$14) (2\sqrt{y} - 3)(\sqrt{y} + 2)$$

$$2y + 4\sqrt{y} - 3\sqrt{y} - 6$$

$$\boxed{2y - 6 + \sqrt{y}}$$

$$15) \frac{3}{\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}} = \boxed{\frac{3\sqrt{5}}{5}}$$

$$16) \frac{\sqrt{27} + 2\sqrt{12}}{\sqrt{3}} = \frac{\sqrt{27}}{\sqrt{3}} + \frac{2\sqrt{12}}{\sqrt{3}}$$

$$\sqrt{9} + 2\sqrt{4}$$

$$3 + 2 \cdot 2$$

$$3 + 4$$

$$\boxed{7}$$

Multiply by
Conjugates

$$17) \frac{\sqrt{3}+1}{\sqrt{3}-1} \cdot \frac{\sqrt{3}+1}{\sqrt{3}+1} = \frac{3+\sqrt{3}+\sqrt{3}+1}{3+\sqrt{3}-\sqrt{3}-1}$$

$$\frac{4 + 2\sqrt{3}}{2} = \boxed{2 + \sqrt{3}}$$

$$18) \frac{4\sqrt{7} + 3\sqrt{2}}{5\sqrt{2} + 2\sqrt{7}} \cdot \frac{5\sqrt{2} - 2\sqrt{7}}{5\sqrt{2} - 2\sqrt{7}}$$

$$\frac{20\sqrt{14} - 8(7) + 15(2) - 6\sqrt{14}}{25(2) - 10\sqrt{14} + 10\sqrt{14} - 4(7)} = \frac{14\sqrt{14} - 26}{22} = \boxed{\frac{-13 + 7\sqrt{14}}{11}} \text{ (C)}$$

$$19) (-3x^2y^3)^3$$

$$(-3x^2y^3)(-3x^2y^3)(-3x^2y^3)$$

$$\boxed{-27x^6y^9} \text{ (D)}$$

$$20) 2x^3 \cdot 3x^2$$

$$\boxed{6x^5} \text{ (B)}$$

$$21) (5ab)(-2a^2b)^3$$

$$(5ab)(-8a^6b^3)$$

$$\boxed{-40a^7b^4} \text{ (A)}$$

Same base subtract exp.

$$22) \frac{3^{x+2}}{3^x} \rightarrow x+2-x=2$$

$$3^2 = \boxed{9} \text{ (B)}$$

$$23) 3x^0 = 3(1) = \boxed{3}$$

$$24) (2b^{-3})^{-2}$$

$$\frac{1}{(2b^{-3})^2} = \frac{1}{4b^{-6}} = \boxed{\frac{b^6}{4}}$$

$$25) (x^n)^3(-5x^n)^2$$

$$(x^{3n})(25x^{2n})$$

$$\boxed{25x^{5n}}$$

$$26) y^5 \cdot y^0$$

$$y^5 \cdot 1 = \boxed{y^5}$$

$$27) \frac{6a^{-3}b^2}{3ab^{-2}} = \boxed{\frac{2b^4}{a^4}}$$

$$28) \left(\frac{-2ab}{3a^{-2}b^2}\right)^3 = \left(\frac{-2a^3}{3b}\right)^3 = \boxed{\frac{-8a^9}{27b^3}}$$

$$29) \left(\frac{-2x^{-2}z^3}{w^{-2}}\right)^{-2} = \left(\frac{-2w^2z^3}{x^2}\right)^{-2} = \left(\frac{x^2}{-2w^2z^3}\right)^2 = \boxed{\frac{x^4}{4w^4z^6}}$$

$$30) \left(\frac{8}{27}\right)^{-\frac{2}{3}} = \left(\frac{27}{8}\right)^{\frac{2}{3}} = \frac{27^{\frac{2}{3}}}{8^{\frac{2}{3}}} = \frac{(\sqrt[3]{27})^2}{(\sqrt[3]{8})^2} = \frac{3^2}{2^2} = \boxed{\frac{9}{4}} \text{ (C)}$$

$$31) (\sqrt[3]{m^4})(m^{-\frac{1}{2}})$$

$$m^{\frac{4}{3}} \cdot m^{-\frac{1}{2}} = \frac{4}{3} + -\frac{1}{2}$$

$$\frac{8}{6} + -\frac{3}{6} = \frac{5}{6}$$

$$\boxed{\sqrt[6]{m^5}}$$

$$32) \sqrt[3]{x^2 y^4} = (x^2 y^4)^{\frac{1}{3}} = \boxed{x^{\frac{2}{3}} y^{\frac{4}{3}}}$$

$$33) (rs)^{\frac{3}{4}} = \boxed{(\sqrt[4]{rs})^3}$$

$$34) (-27)^{\frac{2}{3}} = (\sqrt[3]{-27})^2 = (-3)^2 = 9$$

$$35) 4^0 - 8^{\frac{2}{3}} + 9^{\frac{1}{2}}$$

$$1 - (\sqrt[3]{8})^2 + \sqrt{9}$$

$$1 - (2)^2 + 3$$

$$1 - 4 + 3$$

$$\boxed{0}$$

$$36) \sqrt[3]{8a^4 b^5} \rightarrow (8a^4 b^5)^{\frac{1}{3}} \rightarrow 8^{\frac{1}{3}} a^{\frac{4}{3}} b^{\frac{5}{3}} \rightarrow \boxed{2a^{\frac{4}{3}} b^{\frac{5}{3}}}$$